

## **Claims**

What is claimed is:

- 5        1. Apparatus for providing on-line adaptive predictions for use by one or more applications used in association with one or more operations for which predictions may be requested, the predictions being performed in accordance with at least one model which includes one or more sub-models, the apparatus comprising:

10        at least one processor operative to at least one of: (i) adapt at least one of the one or more sub-models, to be used in computing on-line predictions, when a change is detected in data associated with the one or more operations for which predictions may be requested; and (ii) compute one or more predictions, in response to one or more requests from the one or more applications, using the one or more sub-models determined to provide an optimum prediction combination.

- 15        2. The apparatus of claim 1, wherein the adapting operation further comprises estimating one or more parameters associated with each of the one or more sub-models based on data received with respect to the detected change.

3. The apparatus of claim 2, wherein the one or more estimated parameters for a sub-model are used to update a descriptor associated with the sub-model.

4. The apparatus of claim 2, wherein the adapting operation further comprises testing for a change-point condition.

- 20        5. The apparatus of claim 4, wherein the adapting operation further comprises determining an optimum combination of sub-models, that may be used to compute at least one of the requested predictions, in view of the detected change.

6. The apparatus of claim 1, wherein a sub-model maintains data used to estimate one or more parameters associated therewith.

7. The apparatus of claim 1, wherein a sub-model at least one of computes and stores one or more values associated with one or more sub-model parameters.

5           8. The apparatus of claim 1, wherein the prediction computing operation further comprises computing a prediction for each of the one or more sub-models determined to provide the optimum prediction combination.

9. The apparatus of claim 8, wherein the prediction computing operation further comprises combining the results of the one or more computed predictions.

10           10. A method of providing on-line adaptive predictions for use by one or more applications used in association with one or more operations for which predictions may be requested, the predictions being performed in accordance with at least one model which includes one or more sub-models, the method comprising at least one of the steps of:

15           adapting at least one of the one or more sub-models, to be used in computing on-line predictions, when a change is detected in data associated with the one or more operations for which predictions may be requested; and

              computing one or more predictions, in response to one or more requests from the one or more applications, using the one or more sub-models determined to provide an optimum prediction combination.

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11. The method of claim 10, wherein the adapting step further comprises estimating one or more parameters associated with each of the one or more sub-models based on data received with respect to the detected change.

12. The method of claim 11, wherein the one or more estimated parameters for a sub-model are used to update a descriptor associated with the sub-model.

13. The method of claim 11, wherein the adapting step further comprises testing for a change-point condition.

5           14. The method of claim 13, wherein the adapting step further comprises determining an optimum combination of sub-models, that may be used to compute at least one of the requested predictions, in view of the detected change.

15           15. The method of claim 10, wherein a sub-model maintains data used to estimate one or more parameters associated therewith.

10           16. The method of claim 10, wherein a sub-model at least one of computes and stores one or more values associated with one or more sub-model parameters.

15           17. The method of claim 10, wherein the prediction computing step further comprises computing a prediction for each of the one or more sub-models determined to provide the optimum prediction combination.

20           18. The method of claim 17, wherein the prediction computing step further comprises combining the results of the one or more computed predictions.

25           19. An article of manufacture for providing on-line adaptive predictions for use by one or more applications used in association with one or more operations for which predictions may be requested, the predictions being performed in accordance with at least one model which includes one or more sub-models, comprising a machine readable

medium containing one or more programs which when executed implement at least one of the steps of:

5       adapting at least one of the one or more sub-models, to be used in computing on-line predictions, when a change is detected in data associated with the one or more operations for which predictions may be requested; and

      computing one or more predictions, in response to one or more requests from the one or more applications, using the one or more sub-models determined to provide an optimum prediction combination.

10       20. The article of claim 19, wherein a sub-model maintains data used to estimate one or more parameters associated therewith.

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